

AMENDMENT UNDER 37 C.F.R. § 1.116
U.S. Appln. No. 09/443,460

REMARKS

Claims 1-25 are pending in the application. Applicants thank the Examiner for indicating that claims 7, 9, 14 and 16-18 contain patentable subject matter. Applicants add claims 19-25 as discussed in further detail below.

Claims 10-13 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Deck (4,287,924).

Claims 1-6 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Osawa (JP 04-274919) in view of Spragg (5,769,980), Kaneko (4,265,288), Hayashi (5,427,176) and Kobayashi (6,119,748). Kaneko, Hayashi and Kobayashi are newly cited for this rejection.

Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Deck.

Analysis

Regarding the rejection of claim 10 based on Deck, Applicants adopt the suggestion by the Examiner to amend claim 10 to clarify that the entirety of the rubber protection sheet is disposed radially inward of a line segment that is parallel to the tire axis of rotation and intersects the radially outer end of the bead filler. Deck fails to disclose this structure, and thus, claim 10 is patentable. Moreover, claims 11-13 and 15 are patentable for at least the same reasons as claim 10, by virtue of their dependency therefrom.

Regarding the rejection of claim 1 based on the combination of Osawa, Spragg, Kaneko, Hayashi and Kobayashi, the Examiner takes the position that one would have been motivated to add a rubber reinforcing layer to Osawa because it is well known to add such reinforcement to pneumatic tires (see pages 5-6 of Office Action). The Examiner relies on Spragg, Kaneko, Hayashi and Kobayashi for evidence of such well known use. Still further, the Examiner

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contends that placement of the insert would not affect the carcass structure (see page 12, lines 3-16 of Office Action).

Osawa discloses a pneumatic tire that arranges a shock absorption rubber layer between the filler and the main body portion of the carcass. Each of Kaneko, Hayashi and Kobayashi, which are patents filed by, and commonly assigned to, Bridgestone, and Spragg, disclose a run-flat tire that arranges the sidewall rubber-reinforcing layer at the inner surface side of the innermost carcass ply.

However, as the shock absorption rubber layer of Osawa is merely arranged to solve the special problems in the bead portion of the normal pneumatic tire (without the sidewall rubber reinforcing layer), even though one of ordinary skill in the art may have provided the conventional sidewall rubber-reinforcing layer (of the run-flat tire disclosed in Spragg and the like) in the pneumatic tire of Osawa, one would not have arrived at the run-flat tire according to claim 1 for the following reasons.

In Osawa, as is clear from the description “although the turn-up portion and the body portion overlap each other within a region located more inward than the outer end of the turn-up portion in the radial direction, only the body portion is arranged within a region located more outward than it, so that the bending rigidity drastically changes at a boundary of both the regions, and at such the boundary that the bending rigidity drastically changes, the fall-down deformation is not smooth, but becomes the drastic deformation so as to be folded” (see translation of paragraph [0006] of Osawa enclosed herewith as Appendix), Osawa is directed to the shock absorption rubber layer being arranged in order to disperse the shearing strain in the coating

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rubber of the main body portion which is sandwiched between the organic fiber cord and the filler and corresponds to a portion that is drastically deforming and accompanied with the fall-down deformation in the direction bent around the rim flange as a supporting point.

On the contrary, as the tire of this invention is a run-flat tire having the side rubber reinforcing layer, the rigidity in a zone ranging from the bead portion to the sidewall portion is very large and the rigidity at the outer end of the turn-up portion does not drastically change. Hence, the drastic bending (fall-down) deformation does not occur in the portion corresponding to the outer end of the turn-up portion. Therefore, in the case of the tire construction of this invention, there is no need to disperse the shearing strain resulting from the drastic bending deformation in the vicinity of the outer end of the turn-up portion, that is to overcome the problem of Osawa.

In particular, Applicants found that the run-flat tire having the side rubber reinforcing layer can bear the load without a tension resulting from air pressure of the tire during the running of the tire at the run-flat state and in this case, the shearing strain ϵ_a in the direction of an arrow A is created in the joint face between the main body of the carcass and the bead filler rubber, the shearing strain ϵ_b in the direction of an arrow B is created in the joint face between the turnup portion of the carcass and the bead filler rubber, and the shearing strain ϵ_c in the direction of an arrow C opposite to the directions of the shearing strains ϵ_a and ϵ_b is created in the joint face between the main body of the carcass and the rubber reinforcing layer, as disclosed on page 14, line 19 to page 15, line 1, of the original specification and FIG 7, but the bending deformation as disclosed in Osawa is hardly generated.

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Osawa does not disclose that the shearing strains ϵ_a , ϵ_b , ϵ_c in the direction of arrows A, B, C are created between the specific members, respectively, as shown in FIG. 7.

Therefore, Osawa which is a pneumatic tire when applying the internal pressure to it and claim 1 which is a run-flat tire during the running of the tire at the run-flat state largely differ in their problems to be solved, the tire construction, the action (or the phenomenon) and the effect of the structure.

Moreover, Kaneco, Hayashi and Kobayashi as well as Spragg merely disclose the run-flat tire having the rubber reinforcing layer in the sidewall portion, but provide no teaching for applying it to the Osawa pneumatic tire.

In any case, there is no motivation in the application of the pneumatic tire of Osawa to the run-flat tire of Spragg and the like.

In view of the foregoing, Applicants respectfully submit that claim 1 is patentable. Moreover, claims 2-6 and 8 are patentable for at least the same reasons as claim 1, by virtue of their dependency therefrom.

Finally, Applicants add new claims 19-25 to further define the present invention. Claim 19 corresponds to claims 1 plus 7, and since claim 7 has been indicated as containing allowable subject matter, claim 19 is believed allowable for the same reasons. Moreover, claims 20-24 are added to depend from claim 19. These claims correspond to claims 2-4 and 8-9. These claims are patentable for at least the same reasons as claim 19, by virtue of their dependency therefrom. Finally, claim 25 is added which corresponds to allowable claim 17, rewritten into independent form.

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Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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